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THESIS

for the Doctorate in Medicine

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A Comparison between the

PUBLIC HEALTH METHODS

of

LONDON and PARIS,

Presented by

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Paris, April 1906.



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INTRODUCTION

London and Paris were both native settlements before the "great evolution". The sanitary administration of the two cities, if properly considered, reveals the results of their work and still to be seen in the present day.

A C O M P A R I S O N
between the
P U B L I C H E A L T H M E T H O D S
- of -
L O N D O N and P A R I S.

It is however beyond the purpose of this thesis to trace step by step the evolution of the public health administration of the two great cities. An attempt is made to give a general account of their sanitary systems of to-day, and the conclusions to be drawn therefrom.

By the courtesy of the various authorities I have

I N T R O D U C T I O N

London and Paris were both native settlements before the Roman occupation. The sanitary administration of the Romans, if primitive, was certainly good; remains of their work are still to be seen in Paris in the grounds of the Hôtel de Cluny. Upon the withdrawal of the Romans and their splendid system of organisation little if any progress was made in sanitary matters for many, many years. Interesting documents exist throwing a curious light upon the condition of London, even in the time of the Stuarts when the "local authority" of that epoch frequently petitioned one of the nobility to have the open sewer in front of his house cleansed.

It is however beyond the purpose of this thesis, to trace step by step the evolution of the Public Health Administration of the two great cities. An endeavour will be made to give a concise account of their sanitary methods of to-day, and the conclusions to be drawn therefrom.

By the courtesy of the various authorities I have

had the opportunity of personally visiting and of seeing in operation many of the sanitary arrangements and works, while in addition in Paris I had the benefit of visiting many of these under the auspices of the Institut Pasteur.

The late Sir Benjamin Ward Richardson has put on record his ideal of a model city in describing his "City of Hygeia". This deals much more, however, with sanitation as applied to environment than to the education of the individual. Over forty years ago, Lord Derby speaking at Liverpool said "No sanitary improvement worth the name will be effected, whatever Acts you pass, or whatever powers you confer upon public officers, unless you can create a real and intelligent interest in the matter among the people at large. Whatever administrative measures can do for public health - and they can do a great deal - they can never supersede the necessity for personal and private care. The State may issue directions, municipal authorities may execute them to the best of their power, inspectors may travel about, medical authorities may draw up reports, but you cannot make a popu-

"lation cleanly or healthy against their will, or without their intelligent co-operation. The opportunity may be furnished by others, but the work must be done by themselves. That is why, of the two, sanitary instruction is even more essential than sanitary legislation".

Another Statesman - Stansfield - observes that "Legislation will never make people clean, nor can any sanitary reform be accomplished until the masses are taught the laws of health".

~~"The only way to make people clean is to teach them the laws of health."~~
~~"All that is required is to teach the masses the laws of health."~~
~~"In this case, strangely enough"~~
~~"not an instance of one of the 'unlabeled'."~~ For the attainment of sound moral and physical health (the "mens sana in corpore sano") more is required than ordinarily included in the term sanitation. The habits of self denial and self respect are essential.

Giving evidence before the Select Committee of the House of Commons at present enquiring into the feeding of school children the headmaster of a large London school said "I would put the low vitality down to insanitation, overcrowding, children kept out late at night, unventilated homes, bad clothing and footwear and uncleanness". It is thus essential that

the rising generation should, in spite of the short comings of their homes, be taught the first principles of hygiene for they are the parents of the future. Both London and Paris are recognising this fact.

A notable feature in both London and Paris is the increased attention being given to the teaching of Hygiene, Infant Care and Home Nursing in the schools. The London County Council, the Educational Authority in London are acting energetically on these lines. It is interesting to note that many years ago contrasting our educational system with what it ought to be in the future, Herbert Spencer wrote as follows:-

"If by some strange chance not a vestige of us

"descended to the remote future save a pile of our
"school books or some college examination papers, we
"may imagine how puzzled an antiquary of the period
"would be on finding in them no sign that the learn-
"ers were ever likely to be parents. This must have
"been the curriculum for the celibates, we may fancy
"him concluding, I perceive here an elaborate pre-
"paration for many things, especially for reading
"the books of extinct nations and co-existing nations
"(from which it seems clear that these people had very
"little worth reading in their tongue), but I find no
"reference whatever to the bringing up of children.
"They could not have been so absurd as to omit all
"training for this gravest of responsibilities.
"Evidently this was the school course of one of their
"monastic orders".

II. The science of Public Health considered in its broadest sense and in its particular application to individual reproduction, that is to say, what Galton has classified under his term "Eugenics" must become in our national interests an all important section of Preventive Medicine and one to which, considering the rapidly decreasing birth rate, it behoves that all attention be paid to make the now less numerous offspring the most physically fit, and to maintain the stock in a healthy condition. The fact of the decline in the French birth-rate is well known but is it realized that the British rate has during the last fifty years declined over 17 per cent and that during recent years the decline has been at a greater rate than that of any other European country? Had it not been for the alien immigration the actual population would have decreased. Taking this fact in conjunction with the high infantile mortality it is of supreme national interest to preserve the infant population, the excessive infantile death rate being a standing menace to

the country. Infant management and feeding should be taught to every female child. The London and Parisian authorities are now making an effort to accomplish this.

A comparison of the Public Health methods of London with Paris must necessarily be incomplete, The difficulties of such a comparison rendering it so. These might be classified under the following heads of fundamental differences;- racial, climatic, dimensional, and "constitutional". The Parisians have the lightheartedness and gaiety of the Southern nations. Much of their life is spent out of doors, they have their favourite cafes, where they meet their friends and often transact their business. Their meals and their meal times are essentially different to those of the Londoner. The cloud-covered skies, the frequent rains, fogs, and the high relative humidity of the atmosphere tend perhaps to produce a sober or gloomy state of mind in the Londoner. His mental reserve must not however be put down wholly to climate for Ireland has a climate not less humid than has England but

her inhabitants vie with the Southern nations in lightness and brightness of spirits.

London and Paris differ in size and population, both are situated on the banks of a river but one has the advantage as far as drainage is concerned of being near a tidal estuary. The altitude of London is 50 feet, of Paris 210 feet, above sea level. The entanglement of authorities with a certain unavoidable overlapping inseparable from administration areas of such enormous dimensions and such heterogeneous agglomerate bodies corporate, is, certainly since the new French Law of 1902 (regulating among other things the respective duties of the Prefect de Police and the Prefect de la Seine) more marked in London. These various points are however dealt with in the appropriate section of the thesis, which are as follows;-

Law, administration, authorities statistics,

Hospitals,

Infectious diseases etc.

Disinfection

Housing

Water

Drainage

Street cleansing etc.

Food Inspection

LAW, ADMINISTRATION AND AUTHORITIES.
-----LONDON

2. The chief law governing public health administration is The Public Health (London) Act (1891)

The Local Government Board supervises generally and confers all powers on lesser authorities.

For administration the Metropolis is divided into the City of London and County of London.

The County of London contains the 28 Metropolitan Boroughs.

The City of London has the London Corporation for its authority, has its Medical Officer of Health and also a M.O.H. for the Port of London, responsible to them and the L.G.B.

In Public Health matters each borough is the Local Authority but outside the City proper, the London County Council have a good deal to say on the bigger sanitary questions, e.g. Fellmongers, tripe boilers, slaughterers, and others, must not be established without an order of the L.C.C. and the L.C.C. may make byelaws.

The whole Metropolis, as regards contagious disease, is under the Metropolitan Asylum's Board, which is subject to the L.G.B.

Water supply is controlled by the Metropolitan Water Board, supervised by the L.G.B.

Main Drainage is under the L.C.C. Local drainage under the various Metropolitan boroughs.

The chief French Law is the "Loi du 15 fevrier 1902" with its supplement of "Avril 1903."

By these, "Bureaux de Hygiene" are established both at the "Prèfecture de la Seine" (the Municipal Authority) and at the "Prèfecture de Police." The duties of these 2 departments are now exactly defined and they both issue bye-laws. In an advisory capacity, the "Comité Consultatif d'Hygiene Publique" (art.25 loi du 15 fev. 1902) stands between the Government and the Authorities.

The Prefet de la Seine administers, by his various departments, (art.22)

(1). All that appertains to the public Health of houses and their outhouses excepting lodging houses.

(2). The Sanitation of private passages, whether open or closed at end.

(3) Water Supply

(4) Disinfection, vaccination, and conveyance of the sick.

For disinfection, and transport of sick, he follows instructions of the Prefect of Police.

He nominates a commission on Insanitary areas (Commission des logements insalubres), of 30 members which exercise the powers conferred by the law, as regards this matter on the Prefect of Police.

The Prefect de Police has (art. 23)

(1) The supervision of, Lodging houses.

(2) Notification and preventive measures as regards contagious diseases.

(3) Contraventions of the vaccination regulations.

He continues (as conferred by the old laws) to have charge of Infant Life Protection, Inspection of Animals, Contraventions of the Medicine and Pharmacy laws, makes byelaws as regards the sale and adulteration of food; the Municipal Laboratory and lastly, buildings dangerous, obstructive, or insanitary, but delegates this last to the commission before mentioned.

STATISTICSLONDON

Population

4,536,429		<u>Births</u>	<u>Deaths</u>	<u>Deaths under</u> <u>1 yr.</u>
	1901	131278	78058	19412
	1902	132810	78642	18478
	1903	130906,	69929	16978
	1904	129335	74990	18600

STATISTICSPARIS(population
census, 1901)

2,660,559

<u>Year</u>	<u>Births</u>	<u>Deaths</u>	Deaths under 1 yr. of age
1901	56,569	49,770	
1902	55,365	49,070	
1903	54,155	46,790	6,123
1904	53,659	47,954	

HOSPITALS AND CARE OF INFANTS.

4. Altogether there are about 115 hospitals in London maintained by voluntary contributions. In addition to these there are the poor-house hospitals of the various metropolitan boroughs. These latter are maintained by the rates and in one or two instances are more up to date in their fittings than some of the former in consequence of money being available. As regards the "voluntary" hospitals. The average daily number of beds occupied in the London hospitals is about 7,000; the annual number of indoor patients 100,000; and the annual number of out door patients 1,300,000. The hospitals can be classified generally as General Hospitals with Medical Schools; General Hospitals without Medical Schools; Special Hospitals which can be further sub-divided into Consumption, Children's; Women's, Ophthalmic, etc. The principal, however, are the dozen with Medical Schools, namely, Charing Cross, Guy's, King's College, London, Middlesex, Royal Free, St. Bartholomew's, St. George's, St. Mary's,

St. Thomas's, University College, and Westminster. Taking these twelve collectively the total number of beds is 4,530, the average number occupied daily 3,674, number of in-patients 59,327, number of out-patients 730,080, and the number of lying-in cases attended 15,532. The extraordinary income consisting of donations for special purposes and legacies is £248,179, extraordinary expenditure i.e. on permanent repairs and building improvements £161,831, while the ordinary income is £362,532, and the ordinary expenditure i.e. for the whole of the maintenance and administrative charges £453,171.

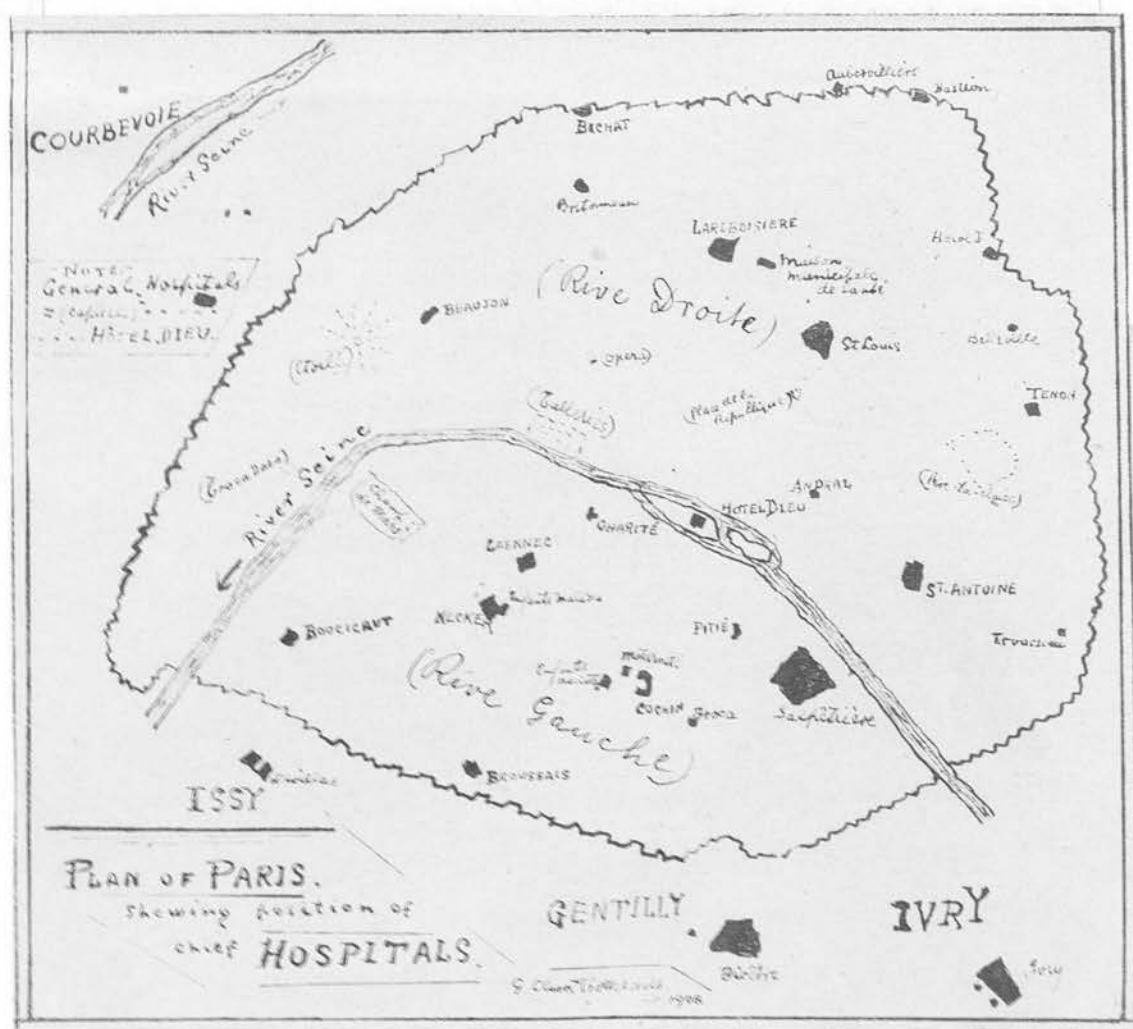
The ordinary income consists, of annual subscriptions, donations, boxes, King's Hospital Fund, Hospital Saturday, Hospital Sunday, Contributions from Work-people, invested property, private nursing institutions, nurses' and probationers' fees, patients payments and miscellaneous receipts.

The King's Hospital Fund was founded nine years ago, as a central body, to create a greater public interest in the hospitals, and to improve their organisation (e.g. endeavour to equalize the cost per bed in hospitals of the same class). It gives grants proportionate to the work done and the requirements of each hospital according to information

based on its visitor's reports. The Fund received in 1905 £361,068, of this £237,206 represents money added to the capital. The position of the London Hospitals financially, however, leaves much to be desired. The Duke of Fife, speaking at the Annual Meeting of the General Council of the Fund, this year said, "There is one thing which nothing seems able to overcome, and that is the extraordinary apathy of Londoners with regard to their hospitals. The great majority of them do not subscribe at all, and the plain truth is that the London hospitals are maintained by a small number of charitable people. The needs and necessities of the hospitals have grown enormously in the last twenty years, and if it was not for doubtful finance, sensational appeals, and every form of begging, many of them would be obliged to close their doors. I observed the other day that at the annual meeting of one of our oldest and best known hospitals the Chairman stated that unless further financial assistance was forthcoming many of their wards would have to be closed, as their annual expenditure was £21,000, and their assured income only £6,000, leaving a deficit of £15,000, and I fear that this is the financial position of most of the London hospitals as far as their assured income is concerned." This forms a marked contrast with the

Parisian Hospitals but then as will be presently shown the hospitals of Paris are on a different footing and the London hospitals are far ahead of those of Paris in general as regards up-to-date buildings, and nursing staffs. The care of the insane in London is under the general supervision of the London County Council, that of imbeciles and of persons suffering from contagious diseases under the Metropolitan Asylums Board.

The hospital administration of Paris is under the charge of the Assistance Publique, which has in addition functions similar to those of the Metropolitan Asylums Board and the Poor Law guardians. The hospitals, - except for the fact that the inmates suffer no social disqualification, all citizens having a right of admission, - as regards status, might be compared to the London Poor Law hospitals. The Funds of the Assistance Publique are derived as follows:- from the Paris municipality £1,120,000; by application of the laws "7 frimaire an V" and "8 thermidor an V" (which give a right of taxing for the poor, theatre and concert tickets), about £154,591, fees (voluntary) paid by patients and gifts bring the amount up to about £1,897,000. The total expenditure is



about £2,208,000 so apparently the difference has to be made up by interest on endowments, bequests etc., while as regards new buildings a popular way of raising money for such purposes in France is by lottery specially sanctioned by the Minister of the Interior. The tickets are sold at the uniform price of 1 franc cash and are eagerly bought by the people of social status from the message girl upwards all hoping some day to draw the "grand lot" of a million francs. The clerical staff of the Assistance Publique number 900, and for the Asylums and hospitals there are about 6,000 attendants and 1,500 workmen. The total number of in-patients (adults and children in 1903 was about 187,649. One is apt to think, however, that the administration is costly, there appears to be too many officials as compared with English hospitals but, then again, money is undoubtedly saved by the centralization, for example, in the purchase of food and supplies in large quantities.

- A. There are 13 "General" hospitals namely Hôtel-Dieu, Pitié, Charité, Saint Antoine, Necker, Cochin, Beaujon, Lariboisiere, Tenon, Laënnec, Bichat, Andral, Broussais, and Boucicaut. The remaining hospitals are classified as Special Hospitals

(a) for Adults (9) (b) for Children (8),
 B. "Hospices" (4). "Maisens de retaite" (3) "Founda-
 tions" (a) Aged(12), (b) children (5), (c) Maternity
 (3) These classifications are by no means exact
 for the "General" Hopital Laënnec is partly an
 infirmary for chronic disease, as is also to a
 much greater extent the "Hospice" (Aliené) of
 Salpêtrière and a large proportion of the other
 hospitals. The following tables compiled from
 Statistics of 1903 give an idea of the large
 number benefitted.

(Classes) 1903

A.			
Patients	(Under treatment)		
	Treated	(Jan. 1st 13,429)	201,561
	(Admitted during)		
	(year 188,132)		
Departed	(Cured or other-)		
	(wise	167,964)	187,743
	(died	19,782)	
remaining			
Dec. 31st.			
			<hr/>
			13,818

B.			
Total admissions,	left,	died,	remained.
29,135,	26,902,	2,102	13,486.

The greater number of the Parisian hospitals are old and the buildings are not well adaptable to modern methods. In many cases new annexes have been built for Surgery and as general enlargements. Another want is a thoroughly trained nursing staff. In 1877 the famous "laicisation" of the Parisian hospitals took place. The religious sisters were removed. It is said that the clergy were primarily to blame for by their artificial and arbitrary ruling, the sisters had become not directly responsible to the medical staff and not invariably obedient to the Medical chief. The entire control of the nursing arrangements was assumed by the Directors and official and medical staffs, and the places of the sisters were taken by illiterate, common unrefined servant nurses of both sexes. These still exist, they favour some patients, even smuggle in drink for them, sometimes drink to excess themselves, and "rag" other patients whom they may dislike. But these excesses are becoming rarer, new nurses trained at the Ecoles Municipales are taking the places of the old. These new nurses drawn from the working classes are supposed to sympathize more fully with the patients, the majority of whom belong to the same social class. An experiment is being made to obtain by

the institution of an "Ecole d'Infirmieres at Salpêtrière the "lady like" nurse. Doubtless the nursing question will right itself in time, the existing condition is immeasurably better than what obtains at Vienna. The difficulty has been due to the sudden expulsion of the Sisters with none capable of taking their place. The Augustine Sisters are still to be seen in three hospitals Hôtel Dieu (head quarters of the order) St. Louis, and Boucicaut, in the latter, the most up to date and newest of the French hospitals, under the conditions of the bequest.

PROTECTION OF CHILDREN.

The Infant life Protection Act of 1897 is administered by the London County Council for the County of London, excluding the City proper where the Public Health Department of the City Corporation undertakes the duty employing an extra female inspector. This Act requires that persons who undertake the care of more than one infant under the age of five years, for a longer period than 48 hours, for hire or reward, or a single infant under the age of 2 years in consideration of a lump sum not exceeding £20, shall notify the Local Authority of the fact. The Local Authority has powers to remove any infant improperly kept, and receives the fines on conviction. As a rule, in London, those who now receive children put out to nurse are found to be hard working women who do their best for the children under their care. At this point might be mentioned the Great Foundling Hospital of London founded by private endowment many years ago. One criticism might be made on the management in the matter of their training none of the girls for domestic service but all becoming shop-girls, dressmakers,

etc. The Employment of Children Act of 1903 gives power to the L.C.C. to regulate by Bye-law child labour under 14 years and street trading under 16. Section 3 of the Act prohibits employment of children under 11 in any sort of street trading and also forbids the employment of children under 14 between the hours of 9 p.m. and 6 a.m. without special consent of the Local Authority. The shop Hours Acts 1892-95 limit to 74 hours a week the employment of persons (both sexes) under 18 years of age, for inspection under this Act 6 male and 3 female inspectors are employed. By the Seats for Shop Assistants Act 1899, one seat to every 3 female assistants must be provided.

There is in London with its population of over $4\frac{1}{2}$ millions a great need for extension and improvement of the "crèches" or day nurseries which compare badly with those of Paris where the crèche system is more fully developed and apparently more successful than it has been in London. Twenty-seven of the fifty-five London crèches refuse admission to illegitimate children. Some take infants when a week or two old, but usually they are not received until they reach a month. In

both cities the crèches are due to benevolent societies and private enterprise. London has crèche accommodation for one infant to about 2,500 of the population whilst Paris has nearly one in 1,000 or about $2\frac{1}{2}$ times that of London. Many districts, and some the poorest of London, have no crèches, for example Battersea, Bethnal Green, Fulham, Greenwich, Paddington, Poplar, and Woolwich.

Battersea and Finsbury however have Infants Milk Depots. The latter in exactly the lines of the Parisian "Goutte de Lait."

In addition to the general Children's and Maternity hospitals of Paris, a Department of the Assistance Publique, the "Service des Enfants Assistés" provides for the maintenance of foundlings, orphans and abandoned children, of whom it brings up some 55,000 boarding them out in the country far from Paris. In due course they are given technical instruction according to their abilities in such work as gardening, housekeeping, cabinet work and printing.

The French Law protecting children under two years of age dates from 1874. The person "putting

must
 the child out to nurse" make a declaration before
 the mayor at the "Mairie" of the Arrondissement, and
 the nurse must have a certificate from the mayor
 and a medical man as to her fitness. There is
 efficient inspection of these children "put out
 to nurse". Some 15 medical inspectors, 6 assistant
 inspectors and twenty female inspectors being em-
 ployed by the Department de la Seine. Many
 Infant Protection Societies exist in Paris, the
 principal being La Societe de Charité Maternelle,
 La Societe Protectrice de l'Enfance, La Societe
 pour la Propagation de l'Allatement Maternelle and
 La Societe des Crèches. Paris with a population
 of about $2\frac{3}{4}$ millions has 66 creches with accommo-
 dation for 2491 infants. The average number of
 infants received daily is about 1840 and the
 average daily attendance at each crèche 30.
 Children are received from birth up to the age
 of 3 years; clothes are almost universally pro-
 vided. A fee of 2d- per day is charged but the
 average daily expense per infant is often over
 10d-. Each establishment contains a minimum of
 from 25 to 30 beds. The crèches are established
 by benevolent societies and by private enterprise

with the sanction of the Prefect de la Seine and are supported by,

- (a) Subscription of the members of a society.
- (b) Gifts
- (c) Legacies
- (d) Contribution from the State (£1,100)
 - " from the Department (£1,048)
 - " from the City of Paris (£6,012)
 - " from Societe des Crèches (£408),

Then there are also the well known Parisian institutions now being copied in this country, the "Consultation de Nourrissons" and the "Goutte de Lait".

Three of the former have been established by Budin at Parisian hospitals, namely (1) La Charite (2) La Maternite, and (3) Clinique d'Accouchement Tarnier, at these the mothers are encouraged by rewards of baby clothes etc. to bring up the infants by the breast and a careful watch is kept both on the health of the mother and infant by the mother's diet being attended to, etc. The "Goutte le Lait" now being imitated at Battersea and Finsbury, as in other towns for example Leith, is not simply an infant milk depot as they are intended to serve as a milk dispensary where

breast feeding is impossible, the infants being fed under medical supervision upon sterilised milk. In both these establishments the progress of the infants is carefully noted by weighing and medical examination.

A Parisian institution which the L.C.C. as education authority in London, might with advantage imitate is the "Cantines Scolaires" for providing school children with a midday meal. Tickets are sold at $1\frac{1}{2}$ d to those parents who can pay, and gratis tickets are given to those who are unable, entitling the child to one portion of meat and vegetables.

An association called the "Caisses des Ecoles" with the mayor of the special "Arrondissement" for president is the administrative body. The expenses are met by the municipal council of Paris donating 1,000,000 francs a year.

The Caisses des Ecoles (1904) 26,642 fcs.

Voluntary contributions (1904) 459 fcs.

Payments by parents 359.093 fcs.

Total cost 1904 = 1,461,305 fcs.

INFECTIOUS DISEASES, etc. -----

5. As regards London, both the Infectious Diseases Notification Act, 1889, and the Infectious Diseases Prevention Act, 1890, are embodied (with some important modifications) in the Public Health (London) Act 1891. The chief provisions might be shortly tabulated thus:-

(1). Notification by medical practitioner or head of family, etc.

Diseases infective classed as follows, smallpox, Cholera, diphtheria, membranous croup, erysipelas, scarlatina, these fevers:- typhus, typhoid, relapsing, continued, puerperal (sect. 55)

(2) Sanitary Authority may add to the number of notifiable infectious diseases (before mentioned)
(Sect. 56)

(3) Sanitary Authority to provide disinfecting apparatus and conveyances for removal of infected persons and articles. (sect. 59)

(4) Powers for dealing with infected persons and articles (Sects. 69-74)

THE ADMINISTRATION.

The administrative authority for London, with regard to infectious disease is the Metropolitan Asylum's Board, having that authority confirmed to it by Section 85 of the P.H. Act (London), and its duties confirmed in other sections. Under their control are 11 infectious diseases Hospitals scattered throughout London, and in addition 3 smallpox hospitals at Dartford, Kent. The notification of infectious disease in London is governed by Section 55 of aforesaid Act. By Sect. 56, (1) A sanitary authority may add to the list of diseases there specified, as regards its own district, whilst by section 56 (6) the L.C.C. can do this for the whole of London. The L.C.C. also takes in hand to spread special knowledge in times of epidemic, as for example in the outbreak of smallpox and plague, it appoints consultants to confer with the General practitioner in doubtful cases.

The notification fee of 2/6d. is paid by the L.A. in the 1st. instance, but afterwards refunded to them by the M.A.B.

In 1904, 39,212 cases of infectious disease were notified (excluding 10,919 cases of chickenpox during

a period of 7 months from the 8th. September)

18,587 cases were admitted to the M.A.B. fever hospitals, 513 to the smallpox hospitals, 64 of these being suspects, found afterwards, to be suffering from diseases other than smallpox.

The following out of the 28 Metropolitan Boroughs have adopted a voluntary notification of Phthisis:- Kensington, Hammersmith, Fulham, Chelsea, Westminster, Hampstead, St. Marylebone, Islington, Stoke Newington, Holborn, Finsbury, City, Southwark, Bermondsey, Lambeth, Wandsworth, Greenwich and Woolwich.

The Local Authorities in this instance pay the 2/6d. fee.

As regards prevention of Tuberculosis, there exists the "National Association for the Prevention of Consumption, and all other forms of Tuberculosis," which carries on an active propaganda.

The Vaccination Acts are administered by the special Vaccination officers as appointed by the Acts. The last Amending Act gives an exemption to a "conscientious objector provided he can satisfy a magistrate that he has conscientious scruples."

In Paris the law as regards infectious diseases is administered by the Préfet de Police. The conveyance of the sick, however, is performed under his instructions from the Préfecture de la Seine. From the Bureau de Hygiene de la Préfecture de Police, is issued the "Ordonnance" portant Reglement Sanitaire," dealing with this matter and with lodging houses.

By the French Law of 10th. Feb. 1903,

- (1). Typhoid, (2). Typhus,
- (3). Smallpox and varioloid, (4) Scarlatina,
- (5) Measles, (6) Diphtheria,
- (7) Miliary Fever, (8) Cholera,
- (9) Plague, (10) Yellow fever,
- (11) Dysentery, (12) Puerperal Fever
and Ophthalmia, Neonatorum and
- (13) Epidemic Cerebrospinal Meningitis,
are notifiable
- (14) Tuberculosis (15) Whooping Cough,
- (16) Influenza, (17) Pneumonia, and Broncho pneumonia.
- (18) Erysipelas, (19) Mumps,
- (20) Leprosy, (21) Ringworm,
- (21) Purulent, conjunctivitis, and granular
ophthalmitis,
are voluntarily notifiable

By a series of "arretes" (10. fevr.1903 etc) provision has been made as exists in London to fix responsibility for notification on (1) medical practitioner, (2) Sanitary Inspector (3) Midwife (4) Members of family (5) Householder, etc.

The medical practitioner is given a book of forms, these are numbered with his special number, and he does not require to sign the form, only to mark in the space provided at each disease. No fee is paid and non-compliance renders liable to a stiff fine. It has been the practice in Paris to treat infectious diseases in special wards set apart in the ordinary hospitals. In the Hôpital Pasteur, the cubicle system is used, great care being taken to disinfect the dishes, etc. used by each patient, only one or two cases of mixed infection have occurred, one to a celluloid comb not being disinfected properly, the others when investigated left reasonable doubt as to the infection having been contracted within the hospital.

A new isolation Hospital has been in use since the beginning of the year at the Porte d'Aubervilliers. It consists of a series of one-storey pavilions well lighted and ventilated; all corners of the wards are rounded off and the walls to the height of $1\frac{1}{2}$ metres are covered with sheet iron enamelled pale blue. Altogether it is simply, but well constructed. Hot water for the wards, however, is heated by large gas heaters and thus there is not

a continuous supply which I would think would be most advantageous in an infectious diseases hospital. The special novelty shown is the sewage sterilisation apparatus of Dr. Brechot. The sewage is filtered through a perforated iron drum containing coke. The liquid is chemically treated before being passed into the sewer; whilst the drum with its contents is heated to a high temperature, the solids of the sewage being burnt with the coke. Each apparatus, (there are 4), can dispose of the faecal matter of 100 patients in $\frac{1}{2}$ hour.

Tuberculosis causes between 12,000 and 13,000 deaths per annum in Paris, or about $\frac{1}{4}$ of the total mortality. Interesting statistics were collected by Vibert from the register of the necropsies at the Morgue. He was struck by the fact that in 131 individuals of from 25 to 55 years of age, having all succumbed to violent or sudden deaths, it was noted that the existence of pulmony tuberculosis was recognised in 25, in 17 of whom the malady was in a cretaceous or fibrous state, - that is to say of tubercules cured. In other words the disease was present in 19.08 per cent of all cases, and in 68 per cent of those in whom it was present it was cured. These figures though far from exhaustive, tend to show

that tubercular disease may be cured in spite of the most unfavourable circumstances.

At the International Congress of Tuberculosis at Paris last October, a paper was presented by Juillerat and Bonnier, demonstrating in a marked manner by plans, how the cases of Tuberculosis are prone to occur where the "court" of the house is small, and advocating the employment in future buildings, of these Parisian courts. The "Casier Sanitaire des Maisons" now in vogue in Paris, gives the authorities exhaustive information. Unfortunately the information concerning particular houses dare not be made public. An old French law protects the proprietor against information given to his detriment, so it is of no use to one "house hunting".

All vaccine making institutes have just recently been subjected to Government inspection. They have been placed under the control of the Council of Hygiene which advises the Government, and the inspection is carried out by the Préfecture de la Seine. The Institute Vaccine Animale, the best known of these institutions, I visited. Its vaccine is extensively used in this country. In Paris, however, it is largely the practice for the Institution to take the calf round to the different stations and vaccination is performed direct from the calf.

The inforcement of the law as regards vaccination etc, is within the province of the Préfet de Police.

The new French law of Feb. 15. 1902 makes vaccination compulsory during the 1st , 11th and 21st years of life: practically none escape vaccination as the schools are visited, and again, the youth undergoing compulsory military service is vaccinated. Somehow one never hears of anyone having conscientious objections on the other side of the channel.

Under the Préfecture de Police is the "Dispersaire de Salubrite," for the inspection of prostitutes, this system is a blot on Paris, it only reaches the very, very poorest; and is open to much abuse. It lays the woman open to false accusation and she is compelled to submit to inspection. Cases have occurred in which virgins, and married women in the 8th and 9th month of pregnancy, have had to submit to inspection. A Parisian medical man told me of an instance which had come under his observation, in which for 26 consecutive days a young girl was shut up every night, just because she looked pert, and perhaps had been cheeky when interrogated by the police. The police list contains the names of a large number of minors, in spite of the fact of the French law protecting minors to the extent of declaring illicit intercourse

with a minor, a criminal offence.

Prostitution is said to be extremely rife in London, and the law a dead letter owing to the attitude of the Police, but there is at least not that indifference and open moral laxity that prevails in Paris.

Disinfection in Paris, is carried out by the Prefecture de la Seine. The methods employed at the Etuves Municipales, I did not find to differ greatly from those employed in the up-to-date disinfecting stations in this country. The pressure disinfecting machine of Geneste and Herscher employed, had each door opening into a separate room as is now common here, there was, however, a mechanical arrangement which prevented the door on the infected side being opened, unless the other was first closed. The "pulverisateur" of Geneste and Herscher, a portable spray apparatus, I was told was used with a solution of 1-1,000 corrosive sublimate, and further that they never had poisoning occurring in the men employed in the work. This is contrary to what I know to have happened in Leith.

HOUSING

6. For the County of London (excluding the City) the London County Council is the authority for procedure in regard to insanitary areas. Under the Housing of the Working Classes Acts 1890 - 1903 when the improvement schemes are of such size as to be of general importance to the whole county. For smaller schemes the duty devolves on the Metropolitan Borough Councils.

The following is a short resumé of the powers conferred by the Act.

Part I deals with unhealthy areas and improvement schemes.

The L.A. in consideration of and being satisfied by an official representation of the unhealthiness of any area, must, provided that their resources are sufficient, initiate a scheme for its improvement.

Such representation is the duty of the M.O.H. and must set forth - (a) houses, courts, or alleys are unfit for human habitation or (b) that the narrowness, closeness or bad arrangement and the

bad conditions of the streets and houses or groups of houses within such area etc. etc.

In London official representation may be made to the L.C.C. by any M.O.H. of a district as well as by the M.O.H. of the C.C. The Home Secretary and not the L.G.B. is the confirming authority.

Part II deals with unhealthy Dwelling Houses and is under the administration of the Borough Councils but the L.C.C. also has power to frame schemes under it and the expense may be divided between central and district authorities.

The Met. Bor. Councils must inform the L.C.C. who may require the District Authority to do more or may themselves do it.

Part III (adoptive) deals with Working Class Lodging Houses. L.C.C. is the authority except in the City where Commissioners of Sewers may adopt it.

As is seen the London Authorities thus possess enormous power to improve the housing of the working class in London far beyond anything that exists in Paris. The stumbling block is the

enormous increase in the rates that is often involved due to the cost and as will be shown the improvements may after all be above the poor owing to the rents charged.

In 1900 power was obtained of "housing" outside the county. Provision has to be made for the total number of people displaced, but the Secretary of State has discretion to reduce the obligation to the extent of one half. The London County Council however always provides accommodation according to the total number. Up to October 1905, thirty-five insanitary areas have been cleared away at a net cost of £2,550,000, and others are in progress of clearing. The largest area cleared, Boundary Street, Bethnal Green, had an extent of 15 acres. During recent years special attention has been given to the provision of workmen's dwellings. The schemes are said to be self-supporting, but this has to be taken "cum grano salis". I find on looking into the matter that there is a juggling with figures and speaking strictly the cost is not made up. It is brought about in this manner. Many

of the areas cleared have a value due to position for business purposes, the cost of acquiring the site is written down very considerably bringing it to what is termed the "housing value" (that is, its estimated value as a residential site pure and simple). The balance of the cost, often a considerable sum, is written off as representing sanitary improvements of the Metropolis. This is permitted under the "Artizans' and Labourers' Dwellings Act". Much is undoubtedly being done in the right direction in London in the housing of the poor, more than in any other City. There has also been a good deal of criticism, inevitable no doubt, for instance, that the Tottenham Estate became a purely building speculation. The new houses are occupied generally not by people displaced but by others. In many cases it is said the rents are too high. Those in humble circumstances cannot afford to pay more for rent than one-sixth of the income earned. It is now impossible for a poor family to obtain two or three rooms in London for a sum that a few years back represented the rent of a small house. There is great want in London of accommodation at

London



Rent 12/- per week.

L.C.C. Cottages at Tooting



Rent 8/- per week.

Housing.

from 3/6 to 4/- per week for the class earning on the average 20/- to 25/-. The London County Council's two-story cottages at Tooting have been a great success. The rents range from 6/- upwards so are rather high for the class who should benefit. The workmen's dwellings and cottages already provided by the Council comprise 15,800 and those projected are estimated to contain 35,000 rooms, the total estimated cost being over £5,000,000. The Council has also provided two lodging houses for workmen, Parker Street House, Holborn, with accommodation for 345 men, and Carrington House (this latter an ideal model lodging house) with accommodation for 802. A third, Kemble Street, Westminster, for 699 is not yet finished.

In London at the present moment "Garden City" schemes are being boomed. That of Letchworth, on the Great Northern Railway, the project of the "First Garden City Limited" is based upon the "back to the land" idea of Ebenezer Howard's book "To-morrow". Certainly the land is dear in the cities and if the works employing the masses of the people could be removed to the country it

would be well, but Letchworth is $34\frac{1}{2}$ miles from London, the return fare is 5/-, and there is on the Sunday one train. The other "Garden City" proposed at Hampstead is certainly more convenient, no long journey. I find the ground acquired is adjacent to the Crematorium. I suppose it was cheap and sanitary, as could also be one's last journey.

In the housing of the poor, London is certainly far ahead of Paris. In France, the country in which the principles of hygiene were first enunciated, the native land of Pasteur, progress is too often checked by bureaucracy, things move slowly, and it may be even twenty years before a recognized scientific fact is acted up to. Thus Paris has long had need of Laws similar to our Common Lodging House, and Housing of the Working Classes Acts. Much has for many years been written on the subject by French Sanitarians. The New French Sanitary Laws 1902-3 are a great sanitary advance but there is nothing corresponding to our Housing of the Working Classes Acts.

There is the "Commission des logements insalubres" for dealing with insanitary property and the regulations issued under the new law are much better than before existed. A minimum window space is laid down, cellars are dealt with and internal sanitation in general. Bye-laws are presented in a manner somewhat different to what we are accustomed, for example, the Préfet de Police in compliance with these new laws, on June 22nd 1904 issued an "Ordonnance" which among other things regulates "logements loués en garni" as regards sanitation, cubic space, etc. The sanitation of houses other than these comes under the care of the other Préfet (de la Seine) who acting by powers conferred in the same laws likewise issues his regulations. These regulations combined might be compared to the bye-laws of the local authority. Great improvement is expected to result from the application of these new laws and especially from the "Casier Sanitaire" of the houses of Paris. Many of the worst slum areas of Paris have been cleared by action of the "Commission des Habitations Insalubres" but no provision has been made for

rehousing. An attempt to foster the building of workmen's dwelling has been made by benevolent societies (Bureaux de Bienfaisance) and by Building Societies. The Parisian Workman's ideal is to save sufficient money to retire to a little cheap cottage erected by these Companies in the hamlets a few miles out of Paris, and live in a hovel till he does save sufficient.

WATER.

7. In 1902 by Act of Parliament a new Water Authority was devised for London. This Metropolitan Water Board took over in June and July 1904 the following eight companies:-

The New River Co.

The East London Co.

The Grand Junction Co.

The West Middlesex Co.

The Southwark & Vauxhall Co.

The Lambeth Co.

The Chelsea Co.

The Kent Co.

It is interesting to note that the New River Co. was originally the old London Bridge Co. and thus dates from 1571. Several of the other companies are also of old establishment. Although now united under one board, each division is still worked separately the old names being retained. The cost of buying up these companies was £45,944,000, plus debts of £11,624,000. making a total of £45,944,000 .

The area supplied by the Water Board termed

"Water London" is about five times that of the County of London proper, being over 620 square miles. The total population supplied on 31st. December 1904 was approximately 6,549,090. The average population during the year was estimated at 6,497,420. The total average daily supply in 1904 was 217,567,234 gallons, representing a daily consumption for all purposes of 33.49 gallons per head or 220.05 gallons per house.

In the business parts of London most of the water is taken by meter and is charged according to quantity taken at from 6d. to 9d. per 1,000 gallons. In other cases the "water rate" is about 5% on the rateable value of the property (for example a house rented at say £50 has a rateable value of about £40 and the water rate is approximately £2). Roughly the gross receipts from the sale of water amount to £2,720,000; this covers the working expenses and pays interest on the £45,920,000 capital.

The water supply of London is derived from the Rivers Thames and Lea, from gravel beds in the Thames valley, from springs in the Lea valley, and from 50 wells in the chalk and green sand formations

At various times when the supply was under the regime of the old companies, an endeavour was made to trace, for example, cases of Typhoid, to say, one particular source, but without definite success the sources being exceedingly complicated in their distribution.

The Grand Junction and West Middlesex districts are supplied from the Thames at Hampton; Chelsea and Lambeth, from Thames at West Molesey. Southwark and Vauxhall get chiefly Thames water from Hampton but also water from two wells. East London gets Thames, Lea and also well water. Lea water spring and well water are supplied to New River District. But the Kent District gets all its water from twenty chalk wells. No difference, however, has been shown to exist, as regards the prevalence of disease, between the population of this (Kent) district and those, for example, who drink Thames water. The proportions according to the different sources of supply are:-

	(per cent)
Thames	55.303
Lea	24.551
Springs & Wells	20.081
Ponds at Hampstead and Highgate (used for non-domestic purposes only)	.065

Nearly three millions of people in the north and east of London depend as to nine-tenths of their water supply on the river Lea and the underground water stored in its basin. The Thames Conservatory Board and the Lea Conservatory Board receive a payment according to the amount of water taken from the respective rivers. They organize an inspection to prevent pollution. The amount that can be taken is limited (in the interests of navigation, etc); in the case of the Thames 435,500,000 gallons in 24 hours is the maximum permitted.

It will be noted that 80 per cent is river water, The Thames and Lea pass through thickly populated areas, the population above the intakes being quite 1,200,000. The risk of pollution especially near London is great, for besides pollution by drainage (surface and otherwise) both the rivers during part of the year are a pleasure resort and highway for thousands. In times of flood due to heavy rains the surface water from the land pollutes the rivers and storage accommodation is necessary to draw upon at these times. A series of Royal Commissions from

1828 on, arrived at conclusions confirmed by the Rivers Pollution Commissions in 1866 and 1874 and later "that the Thames should as early as possible be abandoned as a source of water for domestic use."

Dr. Tebb, public Analyst of the Metropolitan Borough of Southwark in a report based on analyses made during the period just before the transfer by the old Companies to the new Water Board, has, as a result of his investigations come to the following conclusions, citing a great cloud of witnesses for his contentions against London's present source of water supply.

(1). "That five out of the seven commissions or committees of enquiry which have investigated the quality of the Thames water have condemned the river as a source of domestic supply to the Metropolis."

(2). "That the quality of the water as indicated by the analyses has shown no substantial improvement during the last 30 years."

(3). "That the river and its tributaries are at the present time extensively polluted by sewage, sewage affluents, foul house refuse, and other obnoxious matters.

Intake Works at Hampton.



The Hampton Filters.



(4). "That it is doubtful if this excessive pollution can ever be prevented especially in times of flood, from gaining access to the river."

(5) "That there is no reason to suppose that the poison of cholera or typhoid can be eliminated from drinking water by any practicable process of purification such as filtration."

It is at present admitted that Londoners are at the mercy of the filter beds. The health of London speaks well for the care with which these are worked. I had an opportunity of visiting the enormous area of filter beds at Hampton and noted the order, which permitted some to be out of use for cleaning without unduly taxing the capacity of the others. The Water Board has samples of the water periodically tested, and in addition, and quite independently, an official specially appointed by the Local Government Board takes samples and reports on the work of the Water Board. A fault of the London Water Supply, although it is now almost remedied is that it has been to some extent an intermittent supply. Considering the recent pollution of the basements from the sewers at

Cleaning a Filter.



A Filter in Construction.

times of flood, which I have dealt with elsewhere, this involves a grave risk of aspiration of foul air or water, into the water mains, besides it favours corrosion of the service pipes. However, more than 96% of the houses are now stated to have a constant supply but nevertheless cisterns are used extensively and are recommended strongly in case of shortage. The Water Board has also formed works of intercommunication between the various supplies in case of failure of the supply of any district.

Filtered water is used in London for all industrial and street cleaning purposes as well as domestic purposes, there is not a double system of supply as in Paris.

Paris like London depended, for a long time, solely on its river for water. Like London the river got so polluted that new sources had to be found. The circumstances of the two cities differ greatly, for many years Paris has had a dual system, the new sources of supply being utilized for domestic use, and the Seine water used for public and industrial purposes. It seems in a way odd in London to carefully filter sewage tainted Thames water to use it again in vast quantities for the street cleansing. The main objection given there to a Dual Supply was the liability to mistakes. Now if sea water were used, I doubt if people would drink it in mistake oftener than the once. The disadvantage from the Public Health point of view of the Paris system is that in times of drought the unfiltered water is used to supply any deficiency. The maximum amount of water supplied to the City of Paris in one day was on July 19, 1901, 400,385 cubic yards of spring water used 753,158 cubic yards of water derived from artesian wells and the rivers. This was an aggregate of 233,772,800 gallons. The average daily water supply from all sources in 1901 (for which year complete statistics are available) was 687,594

cubic metres, or about 179,168,500 gallons, which is 59 gallons per day for each inhabitant. This includes the supply of water for all purposes for private and public use (including fountains etc.,

I might here remark that on the Continent of Europe the summer rainfall exceeds that of winter at all events in amount, doubtless due to torrential rains with the thunderstorms, never-the-less owing to the intense heat in Paris in the months of July and August especially, much more water is required for the fountains, gardens and streets, than in London. On the other hand Paris lacks the number of Public baths to be found in London.

The present population of Paris is 2,700,000. The water rent for householders is 20 francs (16/-) per annum for a daily supply of 125 litres (27½ gallons); 60 francs (£2.8/-) for a daily supply of 500 litres (110 gallons). For a daily supply of 2,500 litres (550 gallons) of river water the annual rate is 150 francs (£6); for the same quantity of spring water 300 francs (£12); for 5,000 litres (1,100 gallons) river water per day 300 francs (£12); and 600 francs (£24) for a like quantity of spring



water. The total amount of water rents collected in 1901 by the City of Paris was 18,864,000 francs (£754,560). The expense written down in the budget of the City of Paris for 1901 for the water, repairs to aqueducts, rebate to Compagnie des eaux galeries etc., amounts to 13,794,450 francs, (£551,778).

Paris, by the way, has a constant water supply. The Domestic water supply of Paris consists of spring water from four sources. Dhuis, Vanne, Arre, Loing and Lunain, and in times of "momentary stress" of river water filtered at Saint-Maur and at Ivry. I have with Pasteur Institute excursions visited several of these. The sources of Loing and Lunain are particularly interesting, the wells are sunk through a considerable stratum of peat, down into the chalk and beautifully pure water obtained although the marshy peaty surface looks far from inviting.

The reservoir at Montsouris one of the reservoirs reserved exclusively for spring water was under repair at the time of my visit, so the party was able to explore it thoroughly. It is divided into two separate chambers one above the other. (The original

idea of this arrangement in the Paris reservoirs was to use a chamber for each supply (domestic and public). The arched walls of the supporting divisions and the immensity of the interior resemble although much more massive the interior of some great Cathedral. This immense work built under the direction of Belgrand (1871-1874) is 265 metres by 136. It is built entirely of millstone and cement, with the exception of the arched roof which is of brick, and cost over £280,000

There is a "Service de la Surveillance des eaux de Paris", the water from the different sources is examined at frequent intervals. In summer if river water is partly supplied notices are sent to all the houses in the District warning the people of the fact. This notice was not in former times always given and the change was often the signal for an outbreak of Typhoid or Cholera, in fact in 1892, the expression "Pas d'eau de Seine pas de cholera" became almost proverbial. However since then more sources of spring water have been exploited for near Paris, unlike London, there are deep wells though the chalk and its underlying clay into the so-called green sands such as occur to a very limited extent beyond London at Reigate, Redhill and Sandy. Nevertheless there has been talk of tapping the Lake of Geneva for

Paris, its southern shore is French territory, but it would require however a conduit about 300 miles long, and with its double system of supply and excellent existing springs, Paris apparently does not think the matter of a fresh supply is as pressing as it may be in the case of London.

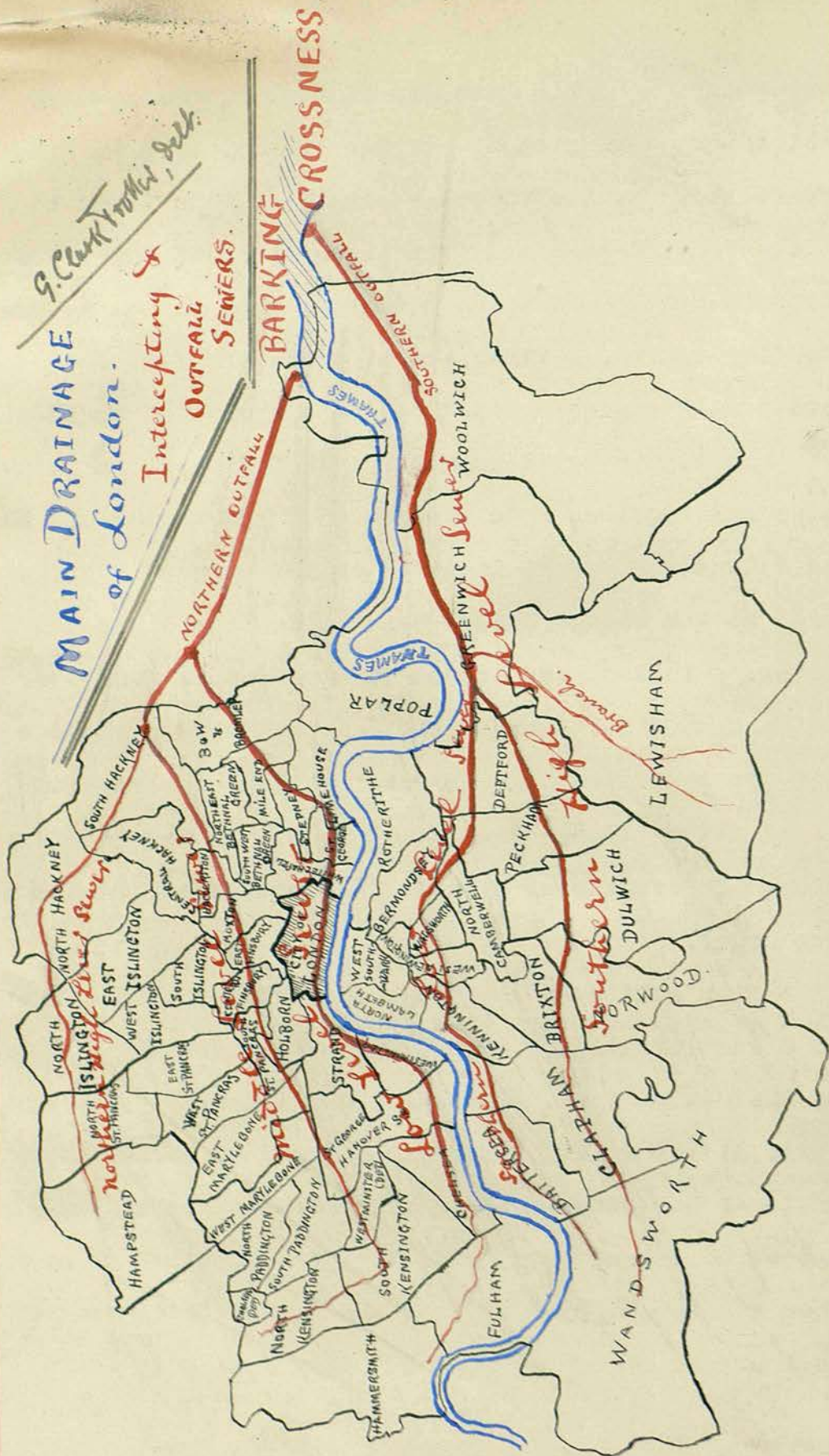
D R A I N A G E

Before the year 1855 all the drainage of London, was delivered into streams discharging directly into the Thames between the bridges. Many of these such as the Fleet Sewer and Counters Creek had been old river channels arched over after being for years receptacles for solid and liquid filth. In fact in the network of old sewers gradients are found often in one direction, then in the reverse, whilst size and section often vary in a length of 100 feet in a most marvellous manner. The Thames naturally was in a very polluted state and in addition at high water the tide closed the outlets and dammed back the stagnant sewage which accumulated in the low lying portion of the sewers in many cases for 18 hours out of the 24. The discharge thus took place at low water only, when the tide rose it was carried up the river, brought back to London by the falling tide, there to mix with the next day's supply. Only in times of heavy flood was any appreciable quantity carried out to sea, while owing to the small quantity of water in the river at low-water, the Thames at London was a veritable "septic tank". Prior to 1847 the sewers had been managed by 8 distinct public bodies but in that year these were

superseded by the Commission of Sewers, the members of which were nominated by the Government. Within nine years this Commission was reconstructed no fewer than 6 times. In 1856 a Metropolitan Board of Works was constituted and it began the great work of the Intercepting sewers. These are at a deeper level than the old sewers and were first put into operation in 1866.

In 1882 a Royal Commission on Metropolitan Sewage disposal inquired into the state of the Thames and in an exhaustive report insisted on the need of purification of the sewage before being discharged into the river. In 1889 the London County Council took over (with many other things) the main drainage of London but the local drainage is dealt with by the various local authorities, borough councils, and the Corporations of Westminster and the City of London, in their own areas.

With all these shiftings of responsibility, due to dissatisfaction with the various bodies and attempts to improve matters, the palm for solid work performed rests with the old Metropolitan Board of Works. Their engineer Sir Joseph Bazalgette executed the splendid system of intercepting sewers, the population of London then was $2\frac{1}{2}$ millions and the sewers were designed for an increase of one million but have done duty for a



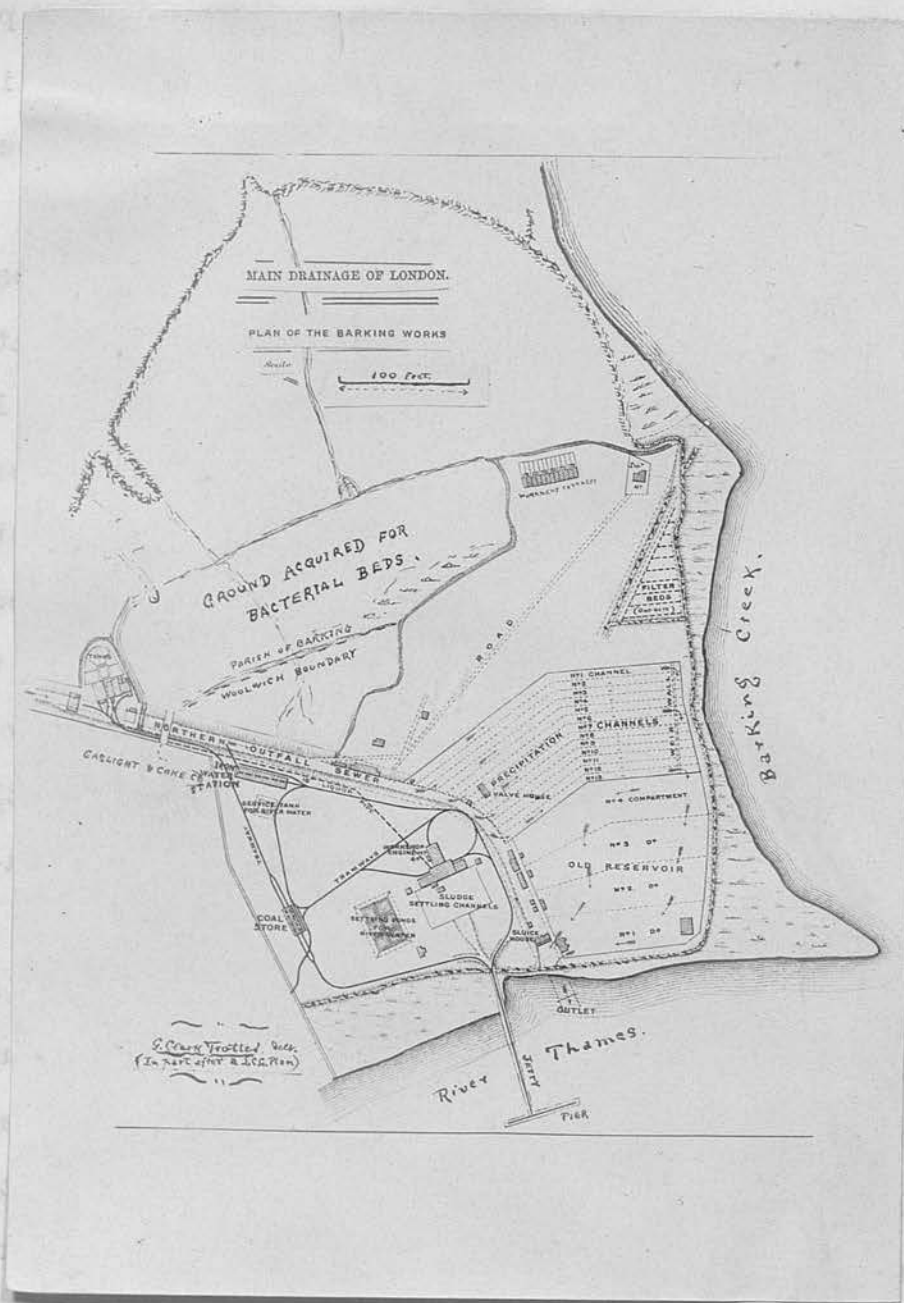
population of 5 millions. The sewage, together with the rain water, passes from a network of drains controlled by the Metropolitan Borough Councils in London and five or six of the Local Councils outside London into a system of main sewers provided and maintained by the London County Council, these sewers run generally North and South following the lines of the valleys

The main sewers are crossed by a series of still larger sewers, called the intercepting sewers (see plan) through which the whole of the sewage flows to two points on the Thames below London - one at Barking on the northern bank and the other at Crossness on the southern bank, 11 and 12½ miles respectively below London bridge. There are 5 of these intercepting (outfall) sewers three (at present finished and in use) on the north, and two on the south of the river. These intercepting sewers are of great size, some of them having a diameter of nearly 12 feet, or nearly as much as that of the London Tube Railways. Two of the intercepting sewers flow the whole distance by gravitation, but in the case of the other three the sewage has to be pumped once or twice to obtain the necessary gradient for a flow by gravitation.

Storm relief sewers and pumping stations have had to be provided to deal with the extensive flooding due to storm water. These are of recent introduction the L. C. C. having occupied itself with more attrac-

tive improvement and housing schemes. During the last few years the sewers taxed to the utmost, owing to the increase of the sewage proper, and the increased rain water due to the land being built on and no longer pervious, have been unable to stand the strain and floodings of basements and cellars have resulted. The householder himself bound by stringent by-laws directed against the possibility of the escape of sewer gases, complained to the Local Authority and getting no satisfaction threatened to appeal to the L.C.C. when he learned that the court of appeal was the offending authority. After much agitation as a sort of makeshift these storm relief sewers and pumping stations have been erected, the idea being to deal with all the excess, except the first washings of the sewers which are particularly foul, - at the rainy periods, by discharging directly into the river at the nearest part without purification treatment or taking to the outfalls.

There are three (intercepting) outfall sewers (see plan) on the north of the Thames, (two more being under construction) terminating at Barking and two on the south side terminating at Crossness. The works at Crossness are on the same principle as those at Barking but the sewage of the south side is much less (about $\frac{1}{2}$) in quantity and only $\frac{4}{5}$ the strength that is to say more dilute and less chemicals are used, otherwise my



description of the process at Barking which I visited applies equally well to the methods employed at Crossness.

The old plan when the outfall was first made at Barking was to store the sewage in the large "old reservoir" (see plan) and let it out on the ebb tide but as the sewage increased this was found not to be practicable. Now this reservoir serves simply as a passage for conveying the sewage water, (the suspended matter having been precipitated) on its way to the river.

The treatment at Barking is shortly as follows:

First of all, the sewage is passed through screens, to remove the grosser particles (wood, fibre, string, rags, dead rats etc.) These are afterwards removed by men, there are no mechanical lifting screens as in Paris. I was told in explanation that the L.C.C. make a point of employing manual labour wherever possible. The filth from the screens is disposed of to a contractor who takes it away on his river barge, it is said to be put on land further down the Thames. After screening the sewage is at the lining station dosed with "lime water" This lime water is made by mixing lime with sewage sufficient to slake first, then more sewage to make "milk of lime" this being done in a large mixing tray with arms rotated by steam power.

The Thames Estuary.

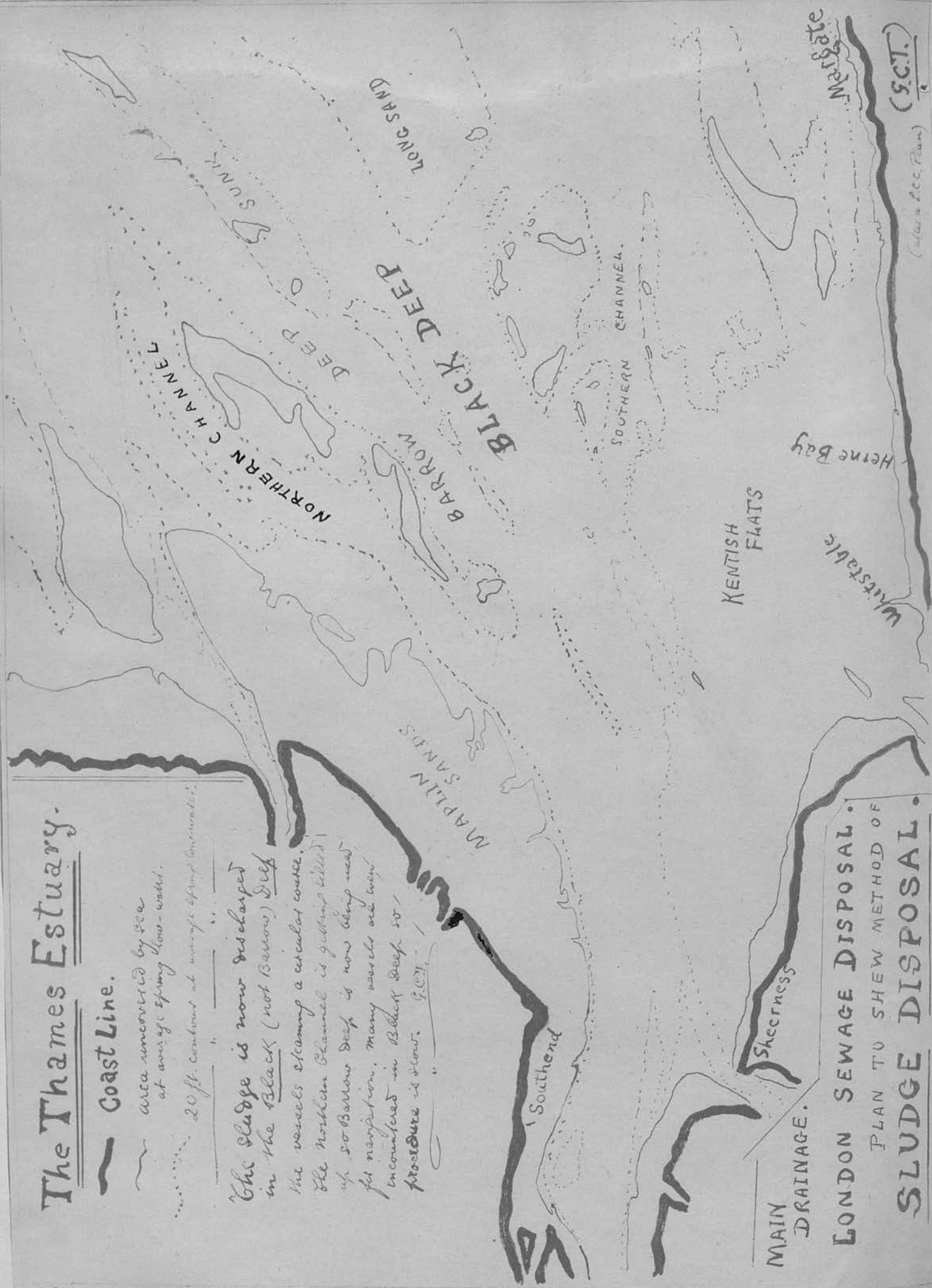
Coast Line.

area uncovered by sea at average spring low-water.

20 ft. contour at average spring low-water.

The sludge is now discharged in the Black (not Barrow) Deep.

The vessels steaming a circular course. The Northern Channel is getting filled up. So Barrow Deep is now being used for navigation. Many vessels are now encountered in Black Deep so procedure is slow. R.C.T.



LONDON SEWAGE DISPOSAL.

PLAN TO SHEW METHOD OF

SLUDGE DISPOSAL.

(SCT.)

(Inches & Feet Plan)

The milk of lime is added to sewage, sufficient in quantity to form "lime water" and as "lime water" is added to the sewage as it flows along (great stress is laid in not adding as "milk of lime, as when this is done only the outside of the grains of lime are affected leaving the centre untouched and thus much lime is wasted).

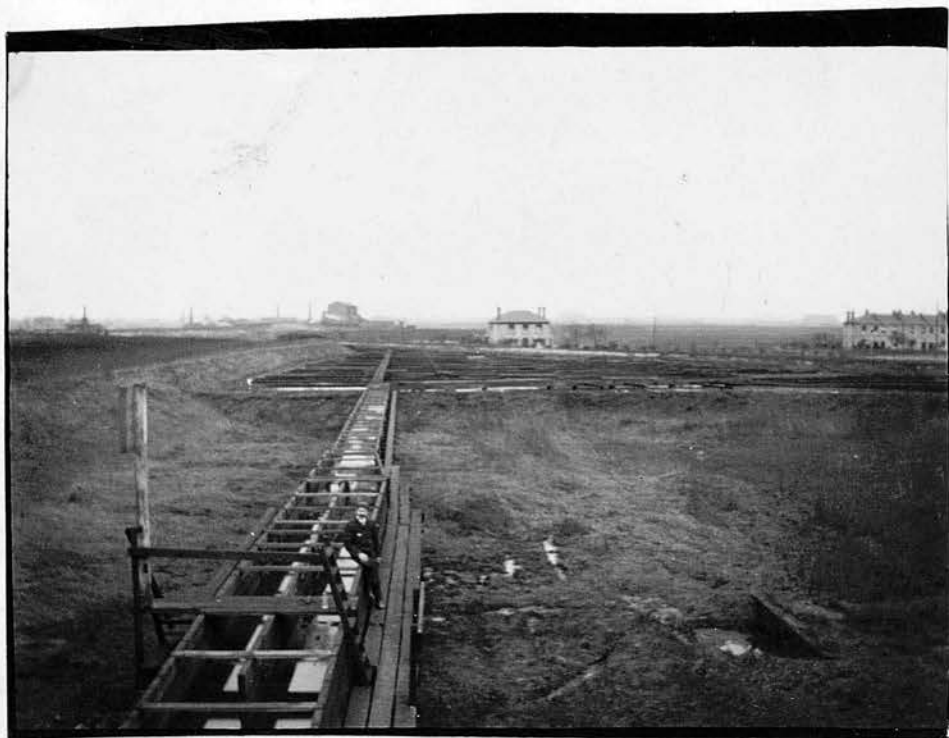
Next the protosulphate of iron is added. This is made first as a concentrated solution using heat to dissolve then diluting and thus cooling before adding to the sewage this is done at the "Iron water station". Precipitation is thus effected by the combined action of about 5 grs. of Lime and 1 gr. of protosulphate of iron per gallon of sewage, the process being completed in 13 precipitation channels by allowing to settle for a minimum of 12 hours. Separation takes place in three layers, at bottom the sludge, then a layer of black water liquor and on top the effluent which is discharged into the river. The black water liquor goes back and is mixed again and again with the sewage to be treated each time.

(u.66) The sludge is pumped into an elevated tank (see photograph) and from it discharged directly into vessels of a special type (there are 6 of these) which take it to Black Deep in the Thames estuary (see plan). The combined flow of sewage (North & South) during the year 1904 was 91,716 million gallons and 2,530,000



Roof of Elevated Bank (h.65)

tons of sludge were taken to sea. In Black Deep the sludge is discharged by the vessels steaming a circular course about the time of the ebb tide. Chemical analysis of many samples taken from the river in September 1903, prove that it is well dispersed, and it is stated that no pollution of the foreshore of Kent or Essex can arise from this cause. This is not surprising considering the mass of water into which it is discharged and its enormous dilution. Bacterial results shew that by the time the tide begins to flow towards the river, the sludge has practically disappeared from the water of the estuary. Of course in this system there is the loss of the valuable nitrates which are returned to the land in other systems. One recollects Liebig's fantastic picture of Britain as a vampire on Europe, sucking out its life-blood and pouring it into the sea, but, that was conceived without taking into consideration, the quantity of nitrates imported in beef, mutton, corn, nitrates for manure, fish from the sea, sulphate of Ammonia from gasworks, nitrogen from the air by leguminous plants &c.



In distance the one acre lake bridge bed.

A small quantity 134 million gallons or about 0.25 per cent of total flow of sewage at Barking is treated on the Experimental One Acre Coke-Breeze bed laid down in 1893 (see plan and photograph). This is the filter bed on which the "classical" experiments were made. These experiments together with those previously begun at Massachusetts (1887) bulk largely in the evidence laid before the Royal Commission on Sewage disposal. But now the filter is in a neglected state, is to a large extent choked up and requires renewing. The Council in view of the findings of the Commission and the following report of its own advisors have acquired land (see plan) for filter beds to be made in the future but only to treat, in the meantime, any excess of sewage, over that now treated by precipitation, that is, these works will not be enlarged for increase in amount of sewage but that increase will be treated by the bacterial methods. The report of Clowes and Houston referred to has the following conclusions :- "An unbiassed consideration of the subject from the practical and economic point of view, might not result in conclusions favourable to the biological as compared with the chemical treatment but nicely balanced questions of alternative cost should not be allowed to dominate the serious question at stake, namely, the extent to which it is possible and practicable to improve the condition

"of the lower Thames. No doubt, special laws and
 "privileges are attached to the discharge of London
 "Sewage into the river Thames; but to take undue ad-
 "vantage of this circumstance would be inconsistent
 "with the liberal and progressive policy pursued by
 "the Council in regard to other matters affecting
 "public health."

The house drainage and sanitary fittings of
 London are far in advance of those of Paris for as
 will be seen, Paris is in the transition stage from
 the old order of things. Of course valve closets
 etc., still exist in the older houses in London but
 Paris is still much further back with cesspools etc.

The Public Health (London) Act 1891 ordains
 shortly as follows :-

- (1) Sanitary Authority to require proper and
 sufficient water-closet accommodation to
 houses (Sect. 37) and factories etc. (38)
- (2) County Council and Sanitary Authorities
 are required to make bye-laws respecting
 water closets. (Sect.39)
- (3) Sanitary Authorities have power to examine
 any water-closet or drain. (Sect^s. 40 -
 42.)

Paris as regards the pollution of its river has had much the same experience as London. At first the sewage was discharged directly into the Seine at Paris. The outfall was then removed a mile or two below the city to Clichy; except for screening the sewage passed in untreated. Between Clichy and St. Ouen the banks were covered with filthy stinking mud and the fish were all killed. From St. Ouen to St. Denis the condition improved a little but at St. Denis the northern outfall, sewer of Paris caused a repetition of the mischief. Matters got so bad at last and an additional impulse being brought about by the cholera outbreak of 1892, which was attributed to the defective state of the sewers, that a law was passed in July 10th 1894 dealing with the matter of irrigation and decreeing that all excreta should pass into the sewers. This law enabled the City of Paris to borrow £4,500,000 to improve its sanitation as regards

(1) Works for conveying and pumping the sewage to irrigation fields and laying out of these
£1,232,000 allotted)

(2) Improving the existing sewers and completing the system (£1,400,000)

(3) The Loing and Lunain sources of water supply (£2,000,000).

To cover to some extent this expenditure, it was made compulsory, where the sewer is provided, for every one to drain into it within three years, after which time a tax for not doing so varying with the rent of the house is charged. Even however in 1904 there were still 34950 houses draining by old methods into cesspools many of these being immediately beneath the houses.

These cesspools are emptied by drawing the contents by means of suction pump action into a metal barrel on wheels. The time chosen is midnight. I retain a vivid memory of such a visit when I chanced to stay once at a ground floor "appartement" in Paris. I was awakened by a fearful racket like the noise of a "vacuum cleaner" which was followed by a most dreadful stench, which kept away any slumber all the rest of the night, in spite of the aromatic smell caused by sprinkling of aromatic essential oils by the men when they had finished. I need hardly say these

Excavation at Place St Michel, Paris, showing the depth of sewers.



A large sewer, in section,
Place St Michel, Paris.

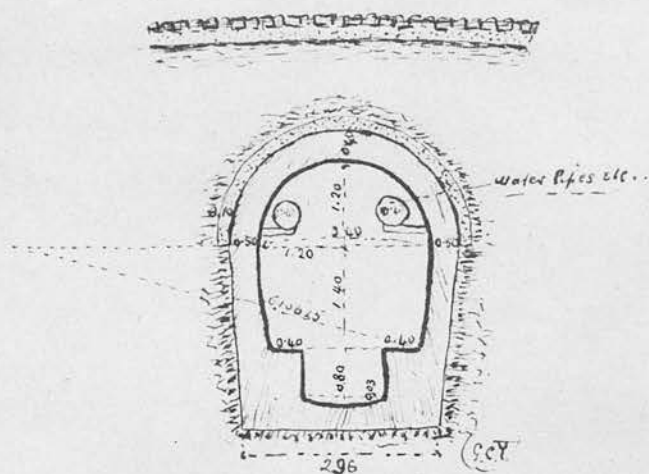
visits are by no means looked forward to with equanimity by the Parisians. The sewers of Paris are entirely different from those of London and are of much greater size. They are gigantic subways freely ventilated by large openings in gutter under edge of pavement. The Sewage flows in a channel at bottom (see fig T.S. Rivoli Sewer) having a ridge as foot-path on both sides of the larger and one side of the smaller sewers. At each side towards the roof, are conveyed the large water mains both "domestic" and "public" of the double supply, telegraph wires, and compressed air pipes. These enormous subways have been graphically described by Victor Hugo in "Les Miserables" but I must confess to a feeling of disappointment for now one is taken along first in an electric boat then transferred to an electric tramway, everything being brilliantly lighted up by electric light, all the corresponding streets overhead indicated by painted name plates, the water pipes etc., all distinctly labelled. The romance of the experiences of Jean Valjean who was lost and nearly drowned in the filth is now spoiled in one's imagination by the turning of this portion of the sewers into a show place.

The Main Drainage
of PARIS.

St. Germain
St. Louis
St. Martin
St. Denis
St. Maurice
St. Ouen
St. Germain des Pres
St. Germain l'Auxerrois
St. Germain le Grand
St. Germain le Petit
St. Germain le Vieux
St. Germain le Neuf

Seine
Canal de la Bièvre

The Intercepting Sewers,

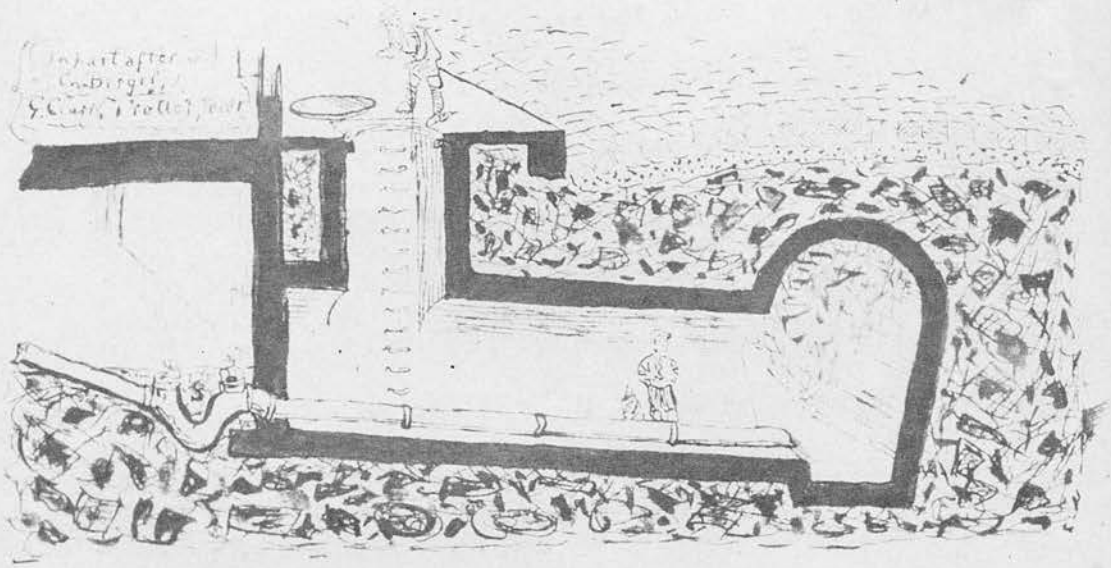


T.S. of Rivoli Sewer.
(after Benmann)

The control of the sewers passed from the Préfecture of Police to that of the Seine in 1859. Belfrand having meanwhile designed the network of new sewers in 1856.

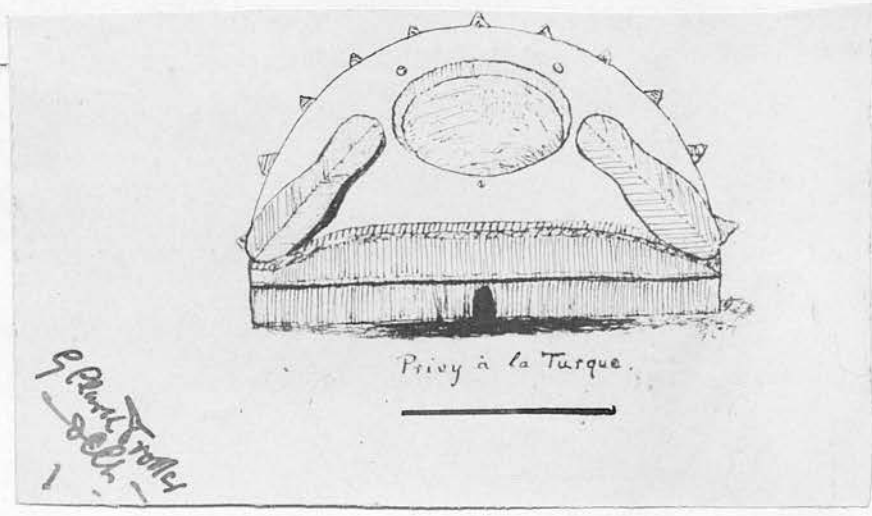
From the plan it will be seen that that the Intercepting principle is adopted as in London. The two main sewers run at right angles to the Seine under the Boulevard de Sebastopol and the Boulevard St. Michel respectively. Below the Place de la Concorde is a main basin from which the "Collecteurs Generaux" or Intercepting sewers conduct the sewage to Asnieres and Clichy. The largest sewers are 16 ft high by 18-20 ft. wide. The manner of cleaning is interesting, boats in some cases waggon of the same width as the channel and provided with a vertical slide are used. The slide is let down and the force of the stream propels the boat along and the sewer is scraped as it advances. The three great outfall sewers of Clichy, Asnieres and Marceau verge towards the Usine de Clichy (see plans) here the screening is done, I noticed, by mechanical lifting screens (not by hand as in London) and the

sewage pumped across the Seine and directed by further pumping and syphonage to the irrigation fields. The Sewage of the 4th or Northern "Collecteur" passes in two aqueducts through St. Ouen by gravitation alone into the irrigation fields of Gennevilliers. The Parisian irrigation fields are 4 in number (see plan) Presqu'ile de Gennevilliers Parc agricole d'Acheres, Region Merry Pierrelaye, and the presqu'ile de Carrieres. All these are elaborately under drained, the first receiving the Northern outfall conducted by gravity alone the other 3 having pumping works for distribution. The Market Gardens or Sewage farms have been a great success, the produce having a ready sale, while



Section, showing access to Sewer.

(In part after G. Berger, G. Clark Trotter, & Co.)



Privy à la Turque.

G. Clark Trotter & Co.

the shocking condition of the Seine is now a thing of the past. The marked differences of the Paris sewers from those of London will be noticed from my drawings, a side gallery with a manhole to the pavement giving entrance to the main sewer. The cry has been raised in Paris for some years, especially strongly since the Cholera outbreak of "tout a egout" and the water carriage system is now becoming general. Paris now has about 80,000 houses but still in 1904 there remained 34,950 houses drained by old systems into cesspools (fosses fixes), fosse mobile (or barrels) and tinettes filtrantes, an apparatus which retains the solids and liquids pass into the sewers. As I remark elsewhere (in my notice of the Casier Sanitaire) these are being rapidly superceded and only occur in the oldest houses.

The English style of water closet has been largely introduced, the French squatting privy (à la Turque) (see illustration) is now adapted to a water trap and flush like the water closet. This method of defaecation which I have heard Professor Chiene term the "cuddy hunker" method is said by some to be more natural, better for the adominal muscles, and to render less liable to hernia, varicoiele and

haemorrhoids but I have been unable to get reliable statistics to throw any light on the matter.

There is a water closet now sold in London which has a seat shaped to give the squatting position.

It is curious to see in some Paris hotels frequented perhaps by provincials, a notice not to stand on the seats of the water closets.

Under the laws of 15 Feb. 1902, and 7 April 1903 from the Bureau d'Hygiene de la Ville de Paris (that is of the Préfecture de la Seine) is issued the Reglement Sanitaire de la Ville de Paris (arrête du 22 Juin, 1904)

This to all intents and purposes corresponds to a series of byelaws. In the main these follow closely the ideas of our Local Government Board Model Byelaws, as regards disconnection of the soil-pipe from the sewer, ventilation of the soil pipe, and the trapping of all house drains, etc. and also (Act. 62) the minimum internal diameter of the soil pipe 10 centimetres and (Art. 64) of the house drain 12 centimetres are prescribed. Article 65 insists that it should have a uniform fall of 3 centimetres per metre.

Art. 69 forbids the putting of solid bodies,

broken dishes and kitchen refuse down the water closets

Article 67 states that the drain ought to be able to stand the "water test" (withstand pressure of water when filled up to level of soil)

(The London County Council Byelaws say for London "2 feet head of water pressure.")

As regards Public Lavatories, the Parisians are far behind London but a commencement has been made by the completion of an underground one after the London pattern near the Madeleine

The method of street cleaning and sewer openings are dealt with elsewhere.

STREET CLEANSING &c.

9. As regards the cleansing of London as carried out by its various authorities, this is dealt with in the Public Health (London) Act 1901. Shortly tabulated the chief provisions are as follows :-

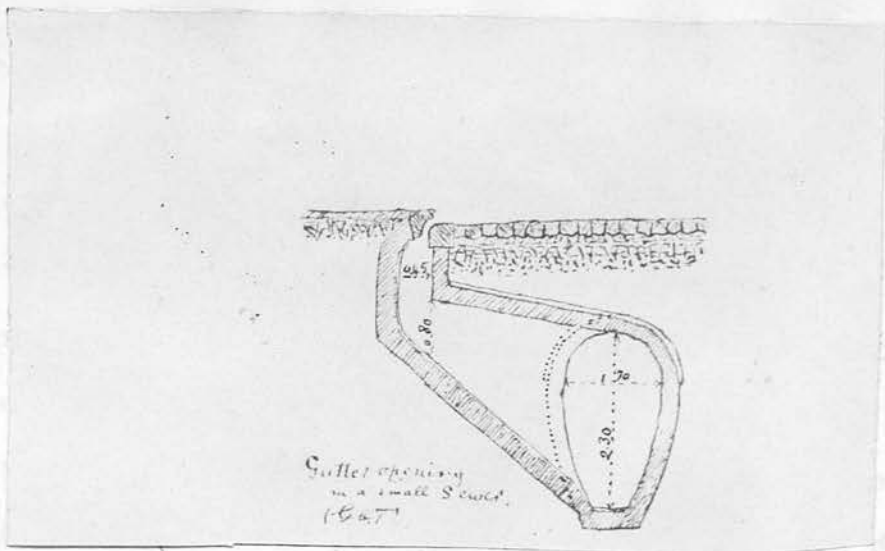
1. The Sanitary Authority must cleanse streets footpaths, cesspits, earth closets, privies and cess-pools.

2. They must remove house refuse at proper intervals, and trade refuse also, if required to do so, on payment.

3. They may undertake the collection of manure and other refuse on request.

The City of London proper occupies but one square mile, at mid-day it has a population of about one and a half millions but gets practically deserted towards evening. The system of street cleaning is admirably organised. The equipment consists of 20 officials and over 800 scavengers, of whom 189 are boys; 6 motors, 80 horses, and double that number of vans, etc. The work is done mainly at night, the streets being thoroughly washed and squeegeed. A curious point is that each Department of the Corporation of London works separately: thus the Corporation police

summon the Corporation scavenger, who puts sludge down the gullies or snow over the bridges into the river. The streets are paved either with asphalt or soft wood blocks: this facilitates cleansing. The water used has to be paid for, according to the quantity, to the Water Board, and a Water Board man times with his watch each hydrant. This anomaly is, however, to be done away with, the Corporation has had to pay, not only for the water, but also by time for the inspector. Now, however, the charge is to be made on the basis of an average of the amount for the past five years. The hose used is of leather but the wheeled wooden cradle affixed to it is clumsy. The hoses used in Paris are better. Formerly the city refuse was destroyed by destructor across the river in Southwark, but the destructor became a "nuisance", so the refuse is now taken down the river to Hornchurch Marshes, and there put on the low-lying land, as is also the household refuse, with the exception of empty tins, which are sold at the rate of £1.1. per ton. The side streets are certainly cleaned better than those of Paris. The Corporation further possesses motor water-carts, which are not seen on the other side. In Paris the gutter at the edge of the pavement slopes in either direction from the hydrant, a piece of sacking is laid across the gutter forming a dam, and the water allowed to wash the gutter and adjacent edge of the road way, first in



Street Cleaning, Paris.

one direction, and then in the other.

The hose used in Paris is of iron tubing on round hollow ball-wheels, it is jointed by leather joints, the scavenger drags it easily along after him from hydrant to hydrant. In Paris everything not of large size is washed into the sewers, which have an opening at edge of gutter (see figure): the same is caught in special traps and periodically removed. What sand passes into the sewers is removed by the ingenious contrivances I have described in the drainage section.

The widespread use of charcoal as a fuel in Paris and the consequent want of smoke doubtless accounts to a great extent for the cleanliness of the buildings and streets in general.

Monsieur Poubelle, Préfet de la Seine, the last but one, issued a famous ordinance, compelling the proprietor of every house to provide an iron bin for the house refuse; these sanitary bins ever since have gone by the name of "poubelles" In the early morning these poubelles are carefully gone over by the "chiffonniers" (rag-pickers) each one a "specialist". Generally a piece of sacking is laid down and the contents sifted on it, and then returned to the bin. Some collect only glass, some cabbage leaves, some orange peel, etc. (Marmalade goes by the name of Dundee - that of a well known make - in the Paris restaurants, I often wonder what becomes of this orange peel). The Paris refuse is disposed of (as is that of the City of

Street Cleaning Pans.



Showing the hose and
method of dragging from
hydrant to hydrant.



London) to contractors, and is said to be put on land. It is certainly better than that of London, the "Specialists" having removed much more than the mere tins as in London.

FOOD INSPECTION.

10. The food inspection of London is under the direction of the various local Authorities. A great proportion of the inspection falls to the City, whose inspectors examine not only the live animals at Islington, but also the carcasses at the slaughter-houses connected with them, as well as the meat and poultry at Smithfield and Leadenhall. The City, in a local act had conferred on it the ancient powers of the Butchers Company, which gives almost unlimited power of seizure and of procedure against, not the vendor alone, but all through whose hands the diseased meat has passed. At Smithfield after seizure the meat is immersed in an aniline coloured antiseptic solution, coming out dyed a vivid blue, thus unsuited for any purpose except boiling down for fat and manure. Covent Garden, however, is in Westminster. The inspection of fish at Billingsgate and Smithfield is most rigorously performed by the Fishmonger's Company under their charter rights.

The Aldgate private slaughter houses have been generally considered a blot as far as the City is concerned. There used to be 26, but they are now reduced to 8; one of these 8 is, as it were, hanging in

in the balance. The slaughter houses having been old established, are exempted in the Public Health (London) Act from closure if kept properly. One was recently closed by order of the Lord Mayor on account of its insanitary condition. Another's (mentioned above) right may lapse owing to enlargement of the premises. (P.H. (Lond.) Act Sect. 19 (8)) While in some the right lapsed by not being exercised for over 9 months (same section).

These slaughter houses should certainly be abolished; they are in a crowded neighbourhood, within five minutes of the Bank and in their fittings etc. although subjected to much inspection, are by no means anything like what would now be permitted to be erected. The proprietors cling to their rights, and buying them out would be costly, no new licenses are granted when once lapsed, so they are gradually, though slowly, decreasing. The L.C.C. also makes periodical inspections of food, particularly if its attention is drawn to some point of common interest to the boroughs. Recently, it published an exhaustive report by their medical officers on the condition of water - cress beds around London. The beds were described under a number, and altogether the report showed much labour and research; but, nevertheless, the report is utterly valueless. The L.C.C. had no legal right to



Horse fleshers shops, Paris.



trespass and inspect these beds. No doubt considerable tact was displayed to get their samples, but they dare not name the beds for fear of action for libel and damages; so the report is worthless, no one outside the inspectors know which are the bad beds described. Some years ago the L.G.B. investigated contaminated oyster beds. Each bed was fearlessly named, (for the L.G.B. is the highest authority and not liable to action at law for libel in performing its duties.) So their report was most valuable. The sites of the contaminated oysters were known and authorities were able to trace them.

In Paris, Meat and Food inspection is within the province of the Prefecture of Police.

The public slaughter houses (abattoirs) of La Villette and Vaugiraud as well as the Abattoir hippophagique Brancion (for horses), are under staffs of Veterinary Surgeon Inspectors. These have long been held out as examples to authorities in this country. By-laws are in force dealing with the Inspection of foreign meat (i.e. not killed in Paris), and with the Horse Slaughter-houses, there are quite a number of horse "fleshers" in Paris (vide photographs) and the shops seem to be well patronised. Horse flesh only, is sold at these establishments, which are generally distinguished, by the sign of a carved horse's head over the door.

At the central Markets (Halles Centrales) the efficiency of the inspection is in evidence, for in a corner of the building is the "Salle des viandes saisies", where suspected meat is taken. The inspection of other foods is also efficiently carried out by the police inspectors, the analyses being made in the Municipal Laboratory which is under the Police control.

C O N C L U S I O N .

II. In conclusion I would remark on some points of difference between the two capitals, what is better managed in each, what might be improved.

In London there is much confusion owing to the multiplicity of authorities. It is for instance, doubtful even to legal experts, how far the Local Government Board can interfere with the Corporation of the City of London, or with the Post Office, who possess certain rights. The London County Council can intervene to a certain extent as regards the Metropolitan Boroughs, but not as regards the city. As I mentioned in the section on drainage, the methods of the L. C.C. are not always above criticism. An idea prevails that it panders to the more attractive schemes. As regards investigation into contaminated watercress beds and such like, as I mentioned, such are better done as in the case of the oyster beds by the Local Government Board, who have authority, and can act fearlessly, and the information gained can then be of value. In July 1904, a Conference of representatives of the Metropolitan Asylums Board and Metropolitan Boroughs' Councils, was held on the administration of the "Public Health (London) Oct. 1901," with the idea of exchanging views and laying down principles with a

view to the Laws relating to P.H. being equally and uniformly enforced throughout London. But with what result? Twenty nine authorities were invited to send representatives. 25 (not including the City of Westminster) accepted. A heated dispute arose as to whom should have the right to vote, as a result, 2 representatives from Paddington (according to their instructions), had to withdraw. The conference was drowned in talk, resolutions were passed, but there is no evidence that any betterment will result from the meeting; jealousy between the different boroughs exists to such an extent. One of the Boroughs (Poplar), is said to be on the verge of bankruptcy, and the L.G.B. is at present holding an enquiry into its affairs. In short London requires, greatly,

- (a) One single authority under the Local Government Board to control public health matters.
- (2) A water supply from Wales.
- (3) The Main Drainage extended sufficiently to be efficient in the wet season.

With regard to Paris, Paris is certainly behind, as regards house drainage, the old systems have not been rooted out, that takes time. Things move slowly in France, it takes time for the people to be educated to the new methods, and not resent interference. In regard to this matter I stumbled on the following quo-










tation in referring to a French work, "La maison du citoyen anglais défie toutes les forces de l'état. Ce peut n'être qu'une mesure; elle peut être délabrée; le toit peut s'être effondré le vent peut y entrer; la pluie peut y entrer; mais le roi d'Angleterre ne peut pas y entrer." It is the well known utterance of William Pitt, but now in Britain the sanitary inspector does what the King could not, and it is becoming so likewise in France. The new French Laws of 1902-1903 are bringing about a vast change. The "casier sanitaire," an idea got from Brussels and Berlin, is well worthy of imitation in this country, as we have imitated the creches, milk depots, and slaughter houses. There is now no confusion of authority in Paris. Each préfet has his duties defined, but it is to be regretted, I think, that the Préfet de Police still retains in part duties connected with vaccination and infectious disease, which might have been wholly transferred to the Préfet de la Seine. It is also regrettable, I consider, that the tax taken off temperance drinks (boissons dites hygiéniques), has been placed on private gardens. These should be encouraged, cities have every need of these open spaces.

A P P E N D I X .

Casier sanitaire des maisons de Paris.

.....

SIGNES CONVENTIONNELS

Fosse fixe		Typhoïde	T.
Fosse mobile		Rougeole	R.
Système diviseur	 S.D.	Scarlatine	S.
Souillard		Diphtérie	D.
Fontaine		Variole	V.
Canalisation		Coqueluche	Cq.
Couloir		Choléra	C.
Puits		Tuberculose	Tub.
Puisard		Erysipèle	Er.
Cabinets communs situés dans la cour		Fièvre puerperale	F.P. W.

90

CASIER SANITAIRE.

F.F.

1 fosse fixe

F.M.

2 fosse mobile

F.D.

3 Systèmes divers

~~~~~

E.

4 Ecoulement direct

P.

5 Rue \_\_\_\_\_

N° \_\_\_\_\_

S.

6 Eau de source

\_\_\_\_\_

R.

7 Eau de rivière

H.C.

8 Divers habités  
onorant sur des  
cuvettes

ARRONDISSEMENT

P.P.

9 Puits

\_\_\_\_\_

B.E.

10 Maison pourvue  
d'un branchement  
d'égout

C.C.

11 Cabinets communs

E.S.

12 Enquête sanitaire

Quartier \_\_\_\_\_

A.

13 Désinfections

\_\_\_\_\_

M.C.

14 Décès par  
maladies contagieuses

L.I.

15 Logements  
insalubres

NOMBRE D'HABITANTS : \_\_\_\_\_

16

17

18

~~~~~

DESCRIPTION DE L'IMMEUBLE

91 N°

Rue

LONGUEUR DE FAÇADE	NOMBRE DE COURS.
PROFONDEUR	— COURETTES.
SUPERFICIE	NATURE DU SOL DES COURS.
ENTRÉE { 1° porte charretière.	— — COURETTES.
{ 2° porte bâtarde.	SUPERFICIE DES COURS.
} ouvrant sur un vestibule	— COURETTES.
} — une allée.	
NOMBRE DE CORPS DE BATIMENTS	

	INTÉRIEUR			EXTÉRIEUR			OBSERVATIONS
	ÉVIER dans les logements	PLOMBS D'ÉTAGE devant les baies des locaux habités	dans les couloirs ou escaliers	CANIVEAU Couvert	Découvert	BRANCHEMENT d'égout (10)	
Mode d'écoulement des eaux.							

	FOSSES FIXES (1)	FOSSES MOBILES (2)	SYSTÈME DIVISEUR (3)	ÉCOULEMENT DIRECT (4)	Nombre { particuliers . . . de cabinets / communs (11) .	AÉRÉS DIRECTEMENT	AÉRÉS en SECOND JOUR
Nombre et nature des systèmes de vidange.							
					Nombre de chutes.		
					Nombre de ventilateurs.		

	USAGE ALIMENTAIRE	USAGE INDUSTRIEL	NATURE DE L'ABONNEMENT		OBSERVATIONS
			COMPTEUR	JAUGE	
Eaux de source (6).					
— de rivière (7).					
— de puits (5).					

Nombre de logements

	R.-de-ch.	1 ^{er} étage	2 ^o étage	3 ^o étage	4 ^o étage	5 ^o étage	6 ^o étage		Sur cave ou sur terre-plein
e corps de bâtiments.									
e —									
e —									
e —									
e —									

Établissements industriels et commerciaux (16)

Nombre d'habitants.	
— de boutiques sur rue.	
— de pièces habitées prenant jour sur des courettes (8).	
Époque de la construction de la maison.	

Le 190

STATISTIQUE DÉMOGRAPHIQUE ET SANITAIRE

Paris, Imp. Henon (78).

[illegible]

ANNÉES

MOIS ET JOURS

[illegible]

Rue N° 55

DÉSINFECTIONS

[illegible]

N^o 94

INSALUB

RAPPORT DE LA COMMISSION LE.....

DÉLIBÉRATION DU CONSEIL MUNICIPAL LE

Prescriptions :

Condamnation :

Dossier classé le.....

Par suite de :

Rue

n°

ENQUÊTE SANITAIRE

	{	Sans revêtement
	{	Pavé
Nature du sol des cours.	{	Bitumé
	{	Cimenté
	{	Dallé
	{	Fosse fixe
Nombre et nature des systèmes de vidange	{	Fosse mobile
	{	Appareil sur réservoir
	{	Appareil diviseur
	{	Écoulement direct
	{	de chutes
	{	en bon état
	{	en mauvais état
Nombre {	{	de ventilateurs
	{	en bon état
	{	en mauvais état
	{	de cabinets.
	{	en bon état
	{	en mauvais état
Mode d'agencement et d'aération des cabinets.	{
	{
	{

MODE D'ÉCOULEMENT DES EAUX

	{	dans un puitsard
1° Superficiellement	{	dans le caniveau de la rue
	{	jusqu'à la canalisation à partir de la façade.
2° Par canalisation totale		

PLOMBS D'ÉTAGES

Nombre	
Situation {	devant les baies des locaux habités
	dans les couloirs ou escaliers
État	

MOYENS D'ALIMENTATION EN EAU

Eau de la Ville { source
 { rivière

Puits

Humidité permanente du sol, des murailles, etc.

Dépôts de fumiers ou d'immondices

Stagnation des eaux pluviales ou ménagères

Malpropreté des cours, escaliers, {
 couloirs, écuries, etc {

Disposition vicieuse des canalisations, des regards, {
 des entrées d'eau, des siphons. {

AUTRES CAUSES D'INSALUBRITÉ INHÉRENTES

1° A la voie publique . . {
 {

2° A l'habitation {
 {

3° Aux propriétés voisines {
 {

Paris, le 189

I. — EAUX

[illegible]

III. — POUSSIÈRES ET SOL

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are some faint smudges and marks on the paper, particularly near the top edge. The paper appears to be part of a notebook or a set of loose-leaf papers.

(Outer cover)

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